

DAYWALT (G. W.)

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Description of a New Inhaler.

AND

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Treatment of Pulmonary Tuberculosis.



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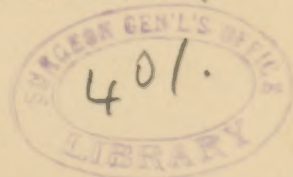
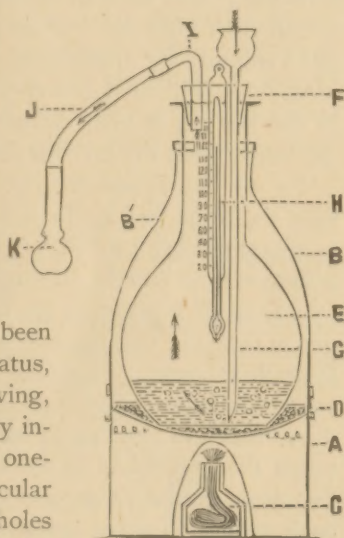


## THE CREASOTE TREATMENT IN TUBERCULOSIS, WITH A DESCRIPTION OF A NEW INHALER.

By G. W. DAYWALT, M. D., San Francisco, Cal.

In 1882, Koch demonstrated the existence of the bacillus tuberculosis, and advocated the theory that the pathological conditions found in the consumptive lung were due to its presence. Since then the scientific world has been encouraged by the hope that soon tuberculosis would be classed among the curable diseases. Accordingly remedies have been employed that were supposed to destroy the bacillus, or to prevent fermentation of food, and thereby the formation of the yeast fungi, thought by some to be the support of the bacillus. So far, of all the remedies suggested, creasote promises the greatest results. From the reports of those who have tried it, success seems to have been attained in proportion as attention was given to its inhalation, at the same time supporting the patient with suitable tonics, wholesome food and good hygiene.

Early in last May, while in conversation with my friend, Dr. W. F. Arnold, U. S. N., he remarked: "It is my belief, if creasote could only be introduced directly to the lungs, the result would be a cure of a large percentage of tuberculous patients, even in the advanced stages of the disease." Having at the time several consumptive patients, I reflected upon what had been said, and finally designed an apparatus, shown in the accompanying engraving, for the administration of creasote by inhalation. The figure represents a one-half vertical section. A is a circular metallic box, perforated with small holes at the top, and with an opening on the side to admit the lamp C; the purpose of which is to apply the heat to the sand bath D; upon this bath rests the bottle, E, sup-





ported in an upright position by two columns, B B. The bottle may be of any size, preferably about one quart, and of any shape, but the design shown in the cut is the most suitable. It is closed by a movable stopper, F, through which passes a glass thistle funnel, G, a thermometer, H, and a glass tube, I, with a flexible mouth-piece attachment, J, K. By this arrangement, suction at the mouth-piece, K, will displace the heated air in the bottle, which is filled again with air through the funnel, G, as shown by the arrows, and is heated simultaneously by being forced to pass through the heated water. Again, the funnel being below the surface of the water, prevents the escape of air from the bottle, except by the passage, I, J, K, and admits adding the medicine by the patient, while breathing through the inhaler. The medicine passing down with the air-current through the water, rises and floats upon the surface, where it becomes volatilized, thereby charging the air ready to be received into the lungs by suction at K.

In this special combination, creasote and medicines of its class can be applied to the respiratory passages in more definite quantities than by any of the various inhalers or vaporizers known to me. Any quantity of the drug can be administered by breathing a sufficient time for it to become volatilized. It is given in combination with "hot air." The necessity of cutting with alcohol, to get a solution for application, is avoided. The creasote is simply mechanically divided into very minute particles, evenly distributed in the hot air, is then carried by respiration into the lungs, and deposited upon the mucous surfaces to be absorbed.

To use the apparatus, put two ounces of water in the bottle, light the lamp, and apply it to the sand-bath. When the thermometer reaches  $120^{\circ}$  F., place the mouth-piece in the mouth, and commence to breathe through the inhaler; at the same time put two drops of creasote in the funnel, and regulate the flame so as not to raise the temperature above  $140^{\circ}$ . After five minutes add three drops more. Continue to breathe through the inhaler for twenty minutes. The treatment should be used at least twice a day, though in two cases I have used it five times. It should be taken the first thing on rising and the last before retiring. After two days, gradually increase the amount of creasote to ten drops each sitting. Twelve drops is the most I have employed in any case. The temperature may be increased even to  $175^{\circ}$  F., but, as a rule, extended only to  $155^{\circ}$ , and the time of treatment at each

sitting to forty, or even sixty minutes. In one case, where the creasote seemed to be unusually irritating, the addition of five drops of chloroform (Squibb's) at the commencement of inhalation, acted like a charm. After ten days it was discontinued, its use being unnecessary. It is best to change the water once a day—each morning. A very important consideration is to have the patient breathe properly. This will have to be taught. Exhaust the residual air by contracting the chest as much as possible. Closing the nostrils with the fingers, have the patient expand the chest to the fullest extent, receiving the air through the inhaler. Then, closing the mouth, have the air expelled through the nose. See that the abdominal muscles are exercised, especially if it be a lady. By a little patience and practice they will soon breathe with ease. Impress upon them the necessity of filling the lungs well—that the better the breathing the greater the results to be derived. It is well to have the inhaler used in your presence every few days, to see that the instructions are being strictly followed.

I have now given, somewhat in detail, my mode of using creasote by inhalation. I have been using it only six months, and on a limited number of patients (fourteen), yet, with these, the results have been so encouraging that I am prompted to write this article. I would not have it inferred that the constitutional conditions of my patients had been neglected, as I have administered such tonics—avoiding iron in all its forms—as I thought suitable for each case. In advanced cases of the disease, I have given creasote internally, generally about four minims a day, with glycerine and whisky.

R—Creasoti (Beechwood), - - - m. xv.  
 Glycerini, - - - - -  $\frac{3}{4}$  iss.  
 Spiritus Frumenti, - - - - -  $\frac{3}{4}$  viiss.—M.

Sig.—A tablespoonful after each meal.

In some cases, I combine the dose with an equal quantity of cod liver oil. For internal administration, guaiacol, a derivative of creasote, will probably come into general use, as it is more pleasant to take. In one case, where creasote seemed to irritate the stomach, even in small doses, guaiacol acted nicely.

R—Guaiacol, - - - - - m. xxx.  
 Tr. Nux. Vom., - - - - -  $\frac{3}{4}$  ii.  
 Malaga Wine, - - - - -  $\frac{3}{4}$  xvi. —M.

Sig.—A desertspoonful, gradually increased to a tablespoonful, after meals.

In conclusion, I will add that, with Dr. Beverly Robinson, I am thoroughly convinced that in creasote we have a valuable remedy for pulmonary phthisis. And who can say that in the near future we may not, by its proper administration, place in the consumptive's pallid cheek the rose of health.

1236 Market street.



## IMPURE CREASOTE THE CAUSE OF FAILURE IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

By G. W. DAYWALT, M.D., San Francisco, Cal.

Since the publication of an article<sup>1</sup> descriptive of my inhaler for the administration of creasote in pulmonary tuberculosis, several physicians have stated that they had failed to get satisfactory results after careful trial. In several cases I have also been disappointed, but have always been able to trace the cause to the employment of impure creasote; and an examination of the drug used by others who have been dissatisfied, has yielded similar results. Realizing the prejudice that could thus be easily excited against a remedy declared to be of decided therapeutic value in tuberculosis by such authorities as Reichenbach, Bouchard, Gimbert, and Beverley Robinson, I purchased five samples of "pure beechwood creasote" at different drug stores, numbered them, and submitted them to Dr. Grazer, of this city, for analysis. The following is his reply:

SAN FRANCISCO, March 5, 1890.

DEAR DOCTOR: The following is the result obtained after examining the samples of creasote, which you purchased at drug stores in different parts of the city, with a view of determining the purity of the article sold as pure beechwood tar creasote. At your request I used the table of tests recommended by W. Brandes, of Germany, as published in *Notes on New Remedies*, of September, 1889. Only one of the five samples proved to be creasote from beechwood tar. While examining the samples received from you, I also subjected to the same tests, a quantity of creasote received from Lehn & Fink, which proved to be a pure article. Its sp. gr. was higher than any of the samples examined. It was almost colorless, and after exposure to sunlight for several weeks was not in the least affected. The boiling point was 396° F. The boiling point of the five samples received from you ranged from 225° to 402° F. Very respectfully,

FRED. A. GRAZER, Ph. G., M. D.

No. 2 is the sample referred to as being the only creasote from beechwood tar. It stood the tests, except that the sp. gr. was too low. This proves its insufficiency of guaiacol, which is the most

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<sup>1</sup> Occidental Medical Times, vol. iv., p. 16.

Samples of Creasote.	Sp. Gr. 65° F.	Color.	Odor.	Glycerine Test. Ph. G.	Caust. Soda Test. H. & H.	Collodion Test. Ph. G.	Ammonia Test. Ph. G.	Caustic Baryta Test. H. & H.	Alcoholic Solution.	Ferric Chloride Test, Ph. G.
No. 1.	1.068	Colorless.	Carbol. Acid.	Clear solut'n.	Clear light solut'n.	Gelatinized.	Entirely soluble—becoming light blue in color.	Separation of creasote; baryta solution, and benzine, in 3 well defined colorless layers.	Liquid	Clear solution of creasote, with water. On adding ferric chloride, solution assumes a dark violet color, becoming light brown after several hours.
No. 2.	1.058	Light brownish red.	Smoky	Insoluble.	Clear light yellow.	Clear fluid.	About one-half soluble in the solution; the supernatant liquid light brown.	Creasote almost colorless, dissolved in benzine; baryta solution, clear.	Cry-stalline.	Creasote, but partially dissolved by the water; the mixture being opaque, due to the mechanical suspension of the creasote. On adding the ferric chloride, a slight greenish color resulted, which rapidly disappeared. The creasote was afterwards deposited, the supernatant liquid being clear.
No. 3.	1.042	Brownish red.	Very smoky.	Clear solut'n.	Dark yellow.	Gelatinized.	About four-fifths soluble in the solution; the supernatant liquid light blue on standing.	Creasote almost colorless, dissolved in benzine; baryta solution clear.	Liquid	On being agitated with water, an opaque mixture resulted as in No. 2; on adding the ferric chloride solution, a violet color; on standing, the greater portion of creasote was deposited, the supernatant liquid being colorless.
No. 4.	1.048	Brownish red.	Tarry.	Clear solut'n.	Light brown clear.	Gelatinized.	Three-fourths soluble in the solution; the supernatant liquid light blue on standing.	Benzine, creasote, and baryta solutions, in 3 layers: benzine clear; creasote clear dark red; baryta solution colorless.	Liquid	On mixing with water, opaque as in No. 2 and No. 3; on adding the ferric chloride solution, a violet color; about half the creasote remaining in solution.
No. 5.	1.052	Dark red brown.	Tar-like.	Clear solut'n.	Dark brown turbid.	Gelatinized.	Seven-eighths soluble in the solution; the supernatant liquid dark blue.	Benzine, creasote, and baryta solutions in 3 layers: benzine clear; creasote dark red; baryta solution colorless.	Liquid	On mixing with water, a clear solution as with No. 1; on adding the ferric chloride, a dark violet color; on standing, a slight deposit of creasote.



beneficial agent for phthisis. Pure creasote is primarily a mixture of guaiacol and cresol, and according to Brandes, "these two are its active constituents and establish its value." The sp. gr. of guaiacol is 1.117, and of cresol 1.080, proving that creasote should be of high specific gravity. The tests in the U. S. P. are only negative—excluding carbolic acid. A creasote may be free from phenol and cresol, yet lacking guaiacol, and then stand all the tests given in the pharmacopeia, since it gives no way of detecting guaiacol and cresol, and allows the specific gravity to range from 1.085 down to 1.035. The test given by Hlasiwetz shows the presence of cresol and guaiacol. It is made by dissolving 50 parts of c. p. caustic potash in 200 parts of rectified alcohol. Put into a test tube 40 ms. of this solution and 4 ms. of creasote. Agitate freely, and in a short time crystallization will commence, forming a solid mass if the creasote contains guaiacol and cresol. As shown by the foregoing table, sample No. 2 stood this test, but its sp. gr. being only 1.058, and its boiling point 402° F., the percentage of guaiacol was small. A good article of creasote should contain about 60 per cent. of guaiacol. Again, the boiling point of guaiacol is 392° F., of cresol 426° F.; considering their relative existence, proves that pure creasote should boil at about 395° F.

In view of these facts, is it any wonder that the creasote treatment has so few advocates? Such products as are used "makes a cure impossible, and brings the pure remedial agent into disrepute." While the pharmacopeia, supposed to be the guide of our dispensers, has not sufficient tests to determine the pure article, yet, if it had, judging from the results shown in the table, it is doubtful if a physician could depend upon them implicitly. To put it mildly, they allow themselves to be imposed upon by a commercial "trick of the trade," to the detriment of those who patronize them. Sample No. 1 was nothing more than carbolic acid, and Nos. 3, 4, and 5 were not even pure coal tar creasote. C. p. creasote from beechwood tar is an oily liquid, colorless, or having a very slightly yellowish tinge. It has a tarry, smoky odor. It will not mix with commercial glycerine, showing absence of carbolic acid. Four ms. mixed with 40 ms. of alcoholic solution of caustic potash, made as described above, will soon form a solid mass, showing the presence of cresol and guaiacol. It should have a sp. gr. of not less than 1.070, and a boiling point not to exceed 397° F.,

proving a predominance of guaiacol. A pure creasote, Huseman, says, is without toxic effect upon the human organism. Dr. Scheteles administered, hypodermically, 3 to 7 ms. mixed with four times the quantity of almond oil. He has repeated this dose daily for months without noticing any unfavorable symptoms. If the profession will see that they secure first, the pure drug, and second, administer it properly, they may eventually see removed from a vast number of their fellow beings the gloom caused by being doomed to die with an incurable disease.

1236 Market street.





